DRISI

Caltrans Division of Research, Innovation and System Information

Research Results

Evaluating Highway Signage Legibility

New typeface does not improve readability and increases costs

Transportation Safety and Mobility

JANUARY 2015

Project Title:
Evaluation of Sign Guide Fonts, TPF-5(262)

Task Number: 2289

Start Date: July 19, 2011

Completion Date: April 15, 2014

Product Category: Improved technical standard, plan, or specification

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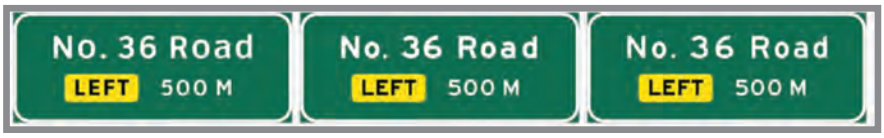
WHAT WAS THE NEED?

Road signage is designed and positioned to help travelers safely navigate from one location to another. The Federal Highway Administration (FHWA) mandates signage standards to promote safety and consistency. The FHWA Series fonts, introduced over 50 years ago to maximize legibility at a distance and at high speed, are still being used, but over time the retroreflective material used for signage to enhance night visibility has been improved. The predominant font for large highway signs is Series E Modified. In the 1990s, the FHWA recommended enlarging the letters to increase visibility, which also meant increasing the size of the signs. As a result, the Clearview font was developed, and in 2004, the FHWA gave interim approval to optionally use the font. Because of the cost implications of changing signage, many states wanted more research before granting full approval. California alone has tens of thousands of guide signs on state and local highways, which would be costly to replace. One concern is that the E Modified font was evaluated in the 1980s using less-advanced retroreflective materials, while Clearview was tested with reflective materials that are much brighter and provide better visibility. To address these issues, the FHWA created a pooled fund study consisting of six states.

WHAT WAS OUR GOAL?

The goal was to compare the signage fonts in terms of visibility and safety and determine whether it is cost-effective to switch to the Clearview typeface.



Clearview (left); Series E Enhanced E Modified (middle); Series E Modified (right)

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WHAT DID WE DO?

Caltrans participated in this pooled fund study conducted at Texas A&M Transportation Institute to compare the Clearview, E Modified, and Enhanced E Modified fonts. Participants from two age groups, 18–35 years old and 65 years and older, drove a closed-course test track in an instrumented Dodge Caravan with low-beam headlights and rated the legibility of three full-sized overhead guide signs and one full-sized shoulder-mounted guide sign during daytime and nighttime conditions. None of the signs were equipped with sign lighting, and there was no roadway lighting.

WHAT WAS THE OUTCOME?

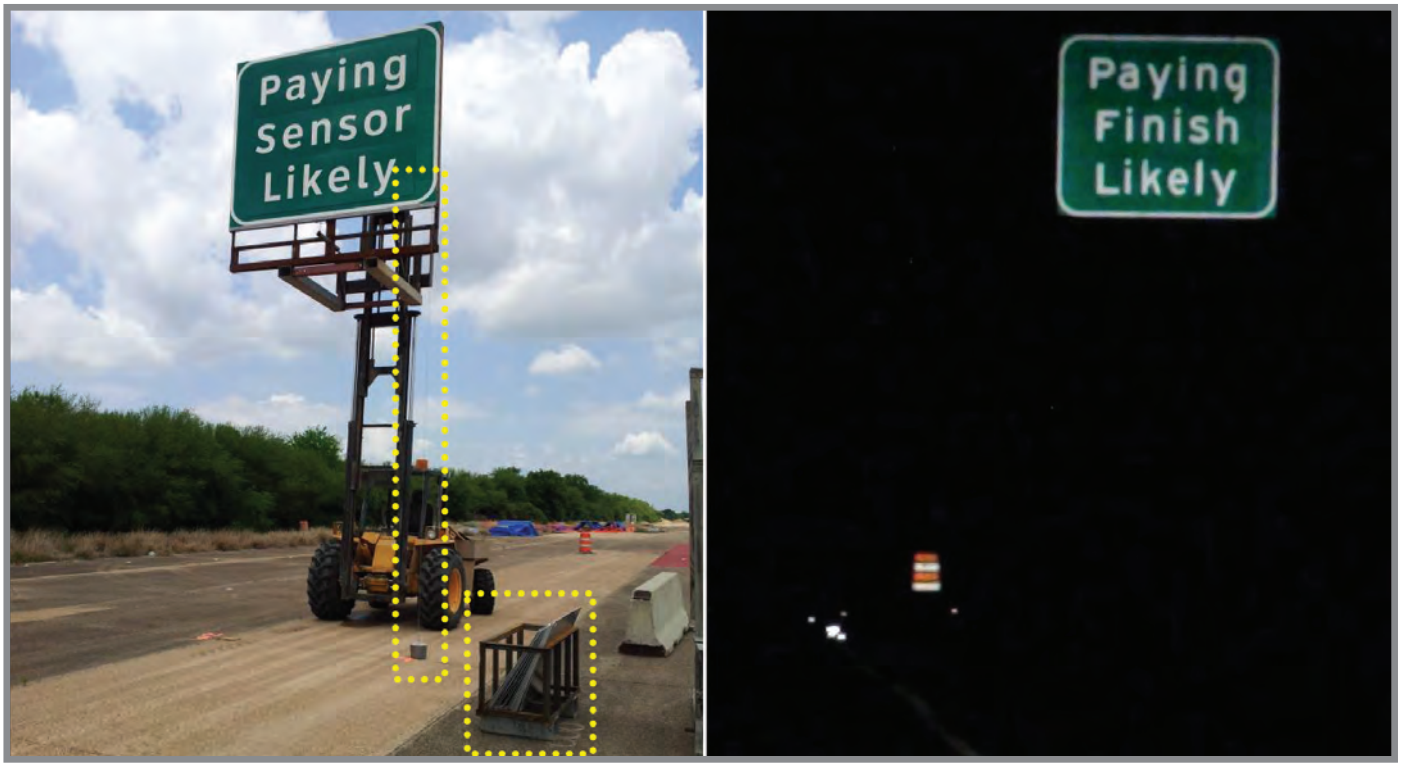
The Clearview font did not provide a statistically significant improvement in legibility. The Clearview font is slightly more expensive to implement than E Modified, so it is neither an improvement to safety nor a reduction in cost. Enhanced E Modified did not provide statistically significant improvement in legibility, but it does not add any cost if used as a replacement. In April 2014, the FHWA indicated that it might rescind interim approval for the Clearview font.

WHAT IS THE BENEFIT?

One of the goals of transportation professionals is to implement practices and facilities that promote uniformity to meet driver expectancy and minimize the costs of facility design and construction. Changes in these standards occur to improve safety or decrease costs without sacrificing safety. Based on this research, there is no reason for Caltrans to change fonts for safety or cost. Not switching to a new standard for guide signs allows funds to be dedicated toward investigating more durable retroreflective materials than the current sheeting, which has about half the lifespan of signs made with reflective buttons on a porcelain background.

LEARN MORE

To view the complete report:
www.dot.ca.gov/research/researchreports/reports/2014/final_report_task_2289.pdf



Testing overhead guide signs in the daytime and nighttime using specific letters for spacing and legibility